```
-\left(S\left(f\left(i\right)\;I\left(i=jp\right)\;f\left(j\right)\;I\left(j=ip\right)\;g\left(k\right)\;I\left(k=jp\right)\;g\left(l\right)\;I\left(l=ip\right)\right)\right)_{\left[i,j,k,l,ip,jp\right]}
-\frac{2\left(S\left(f^{2}(i)\,I^{2}(i\!=\!k)\,g^{2}(j)\,I^{2}(j\!=\!k)\right)\right)_{[i,j,k]}M\,N}{Mp\,Np}\\2\left(S\left(f^{2}(i)\,I(i\!=\!k)\,\underline{I(i\!=\!l)\,g^{2}(j)\,I(j\!=\!k)\,I(j\!=\!l)}\right)\right)_{[i,j,k,l]}M\,N
 \frac{Mp\ Np}{\left(S\left(g^2(i)\ I^2(i=k)\ f^2(j)\ I^2(j=l)\right)\right)_{[i,j,k,l]}M\ N}
Np\ M^2\ N-Np\ M\ N
        2\left(S\!\left(f^2(i)\,I(i{=}k)\,I(i{=}l)\,g^2(j)\,I(j{=}k)\,I(j{=}l)\right)\right)_{[i,j,k,l]}M^2\,N^2
       \frac{2\left(S\left(J^{-(i)}I^{(i-e)}J^{-(i-e)}g^{-(j)}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}N^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{-N}g^{
 \frac{Np\ M^{2}\ N-Np\ M\ N}{\left(S\left(g(i)\ I(i=l)\ g(j)\ I(j=l)\ f^{2}(k)\ I^{2}(k=ip)\right)\right)_{[i,j,k,l,ip]}M^{2}\ N^{2}}
\frac{Np\ M^{2}\ N-Np\ M\ N}{2\left(S\left(g(i)\ I(i=k)\ f^{2}(j)\ I(j=ip)\ I(j=k)\ g(l)\ I(l=ip)\right)\right)_{[i,j,k,l,ip]}M^{2}\ N^{2}}{2\left(S\left(g(i)\ I(i=k)\ f^{2}(j)\ I(j=ip)\ I(j=k)\ g(l)\ I(l=ip)\right)\right)_{[i,j,k,l,ip]}M^{2}\ N^{2}}
        2\left(S\left(f^{2}(i)\,I^{2}(i\!=\!k)\,g^{2}(j)\,I^{2}(j\!=\!k)\right)\right)_{[i,j,k]}M^{2}\,N^{2}
-\frac{\frac{Mp\ Np\ M^{2}\ N-Mp\ Np\ M\ N}{2\left(S\left(f^{2}(i)\ I(i=k)\ I(i=l)\ g^{2}(j)\ I(j=k)\ I(j=l)\right)\right)_{[i,j,k,l]}}M^{2}\ N^{2}}{2\left(S\left(f^{2}(i)\ I(i=k)\ I(i=l)\ g^{2}(j)\ I(j=k)\ I(j=l)\right)\right)_{[i,j,k,l]}M^{2}\ N^{2}}
                                                          Mp \ Np \ M^2 \ N - Mp \ Np \ M \ N
 \frac{\left(S\left(g^{2}(i)\ I^{2}(i=k)\ f^{2}(j)\ I^{2}(j=l)\right)\right)_{[i,j,k,l]} M^{2}\ N^{2}}{Mp\ Np\ M^{2}\ N-Mp\ Np\ M\ N}
2\left(S\!\left(f^2(i)\, \stackrel{\frown}{I^2}(\stackrel{\frown}{i=l})\, g(j)\, I(\stackrel{\frown}{j=l})\, \stackrel{\frown}{g}(k)\, I(\underbrace{k=l})\right)\right)_{[i,j,k,l]} M^2\, N^2
                                                     Mp\ Np\ M^2\ N-Mp\ Np\ M\ N
          \left( S \Big( g(i) \, I(i \! = \! l) \, g(j) \, I(j \! = \! l) \, f^2(k) \, I^2(k \! = \! ip) \Big) \right)_{[i,j,k,l,ip]} M^2 \, N^2
                                                                Mp\ Np\ M^2\ N-Mp\ Np\ M\ N
         2\left(S\Big(g(i)\,I(i\!=\!i\!p)\,f^2(j)\,I(j\!=\!i\!p)\,I(j\!=\!k)\,g(l)\,I(l\!=\!i\!p)\Big)\right)_{[i,j,k,l,i\!p]}M^2\,N^2
\frac{ Mp \ Np \ M^2 \ N - Mp \ Np \ M \ N}{2 \left( S \Big( f^2(i) \ I^2(i{=}k) \ g^2(j) \ I^2(j{=}k) \Big) \Big)_{[i,j,k]}^{} M^2 \ N^2}
                                                Mp\ M\ N^2-Mp\ M\ N
         2 \left( S\! \left( f^2(i) \, I(\stackrel{\cdot}{i=k}) \, I(i=\!\!\!-l) \, \stackrel{\cdot}{g}{}^2(j) \, I(j=\!\!\!\!-k) \, I(j=\!\!\!\!-l) \right) \right)_{[i,j,k,l]} M^2 \, N^2
                                                                              Mp\ M\ N^2-Mp\ M\ N
         \underbrace{\left(S\!\left(g^2(i)\,I^2(i\!=\!k)\,f^2(j)\,I^2(j\!=\!l)\right)\right)_{[i,j,k,l]}^{MPM\,I}M^2\,N^2}_{}
                                                       Mp M N^2 - Mp M N
         2 \left( \hat{S(g^2(i) I^2(i=l) f(j) I(j=l) f(k) I(k=l)} \right) \Big)_{[i,j,k,l]} M^2 \, N^2
 \frac{Mp\ M\ N^2 - Mp\ M\ N}{\left(S\left(f(i)\ I(i=l)\ f(j)\ I(j=l)\ g^2(k)\ I^2(k=ip)\right)\right)_{[i,j,k,l,ip]}M^2\ N^2}
                                                                     Mp\ M\ N^2 - Mp\ M\ N
2 \left( S \Big( f(i) \, I(i = k) \, g^2(j) \, I(j = ip) \, I(j = k) \, f(l) \, \underline{I(l = ip)} \Big) \right)_{[i,j,k,l,ip]} M^2 \, N^2
         2 \left( S \Big( f^2(i) \, I^2(i{=}k) \, g^2(j) \, I^2(j{=}k) \Big) \right)_{[i,j,k]} M^2 \, N^2 
                                            Mp\ Np\ M\ N^2-Mp\ Np\ M\ N
2\left(S\!\left(f^2(i)\,I(i\!=\!k)\,I(i\!=\!l)\,g^2(j)\,I(j\!=\!k)\,I(j\!=\!l)\right)\right)_{[i,j,k,l]}M^2\,N^2
                                                          Mp\ Np\ M\ N^2-Mp\ Np\ M\ N
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 (S(g^2(i) I^2(i=k) f^2(j) I^2(j=l)))_{[i,j,k,l]} M^2 N^2 
                           Mp\ Np\ M\ N^2-Mp\ Np\ M\ N
2\left(S\!\left(g^2(i)\,I^2(i\!=\!\!l)\,f(j)\,I(j\!=\!\!l)\,f(k)\,I(k\!=\!\!l)\right)\right)_{[i,j,k,l]}M^2\,N^2
                                         Mp Np M N^2 - Mp Np M N
        \frac{\left(S(f(i) \, I(i=l) \, f(j) \, I(j=l) \, g^2(k) \, I^2(k=ip))\right)_{[i,j,k,l,ip]} \, M^2 \, N^2}{(i+1)^2 \, i^2 \, i^2 \, i^2 \, i^2 \, i^2 \, i^2 \, i^2} 
                                                  Mp Np M N^2 - Mp Np M N
       2\left(S(f(i)\,I(i=k)\,g^2(j)\,I(j=ip)\,I(j=k)\,f(l)\,I(l=ip))\right)_{[i,j,k,l,ip]}M^2\,N^2
                                                              Mp \ Np \ M \ N^2 - Mp \ Np \ M \ N
       2\left(S\!\left(f^2(i)\,I^2(i{=}k)\,g^2(j)\,I^2(j{=}k)\right)\right)_{[i,j,k]}M^2\,N^2
                               M^2 N^2 - M N^2 - M^2 N + M N
2 \left( S \Big( f^2(i) \, I(i \! = \! k) \, I(i \! = \! l) \, g^2(j) \, I(j \! = \! k) \, I(j \! = \! l) \Big) \right)_{[i,j,k,l]} M^2 \, N^2
                                         M^2 N^2 - M N^2 - M^2 N + M N
 \frac{\left(S\left(g^{2}(i)\,I^{2}(i=k)\,f^{2}(j)\,I^{2}(j=l)\right)\right)_{[i,j,k,l]}^{N}\,M^{2}\,N^{2}}{N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^{2}\,N^
                       M^2 N^2 - M N^2 - M^2 N + M N
2\left(S\!\left(g^2(i)\,I^2(i\!=\!l)\,f(j)\,I(j\!=\!l)\,f(k)\,I(k\!=\!l)\right)\right)_{[i,j,k,l]}M^2\,N^2
                                      M^2 N^2 - M N^2 - M^2 N + M N
2 \left( S \Big( f^2(i) \, I^2(i \! = \! l) \, g(j) \, I(j \! = \! l) \, g(k) \, I(k \! = \! l) \Big) \right)_{[i,j,k,l]} M^2 \, N^2
                                      M^2 N^2 - M N^2 - M^2 N + M N
        (S(g(i) I(i=l) g(j) I(j=l) f^{2}(k) I^{2}(k=ip)))_{[i,j,k,l,ip]} M^{2} N^{2} 
                                                M^2 N^2 - M N^2 - M^2 N + M N
       \left(S\Big(f(i)\,I(i\!=\!l)\,f(j)\,I(j\!=\!l)\,g^2(k)\,I^2(k\!=\!ip)\Big)\right)_{[i,j,k,l,ip]}M^2\,N^2
                                               M^2 N^2 - M N^2 - M^2 N + M N
       2\left(S\!\left(f(i)\,I(i\!=\!k)\,g^2(j)\,I(j\!=\!ip)\,I(j\!=\!k)\,f(l)\,I(l\!=\!ip)\right)\right)_{[i,j,k,l,ip]}M^2\,N^2
                                                           M^2 N^2 - M N^2 - M^2 N + M N
       2 \left( S(g(i) \ I(i=ip) \ f(j) \ I(j=ip) \ g(k) \ I(k=ip) \ f(l) \ I(l=ip)) \right)_{[i,j,k,l,ip]} M^2 \ N^2
                                                               M^2 N^2 - M N^2 - M^2 N + M N
       2 \left( S \Big( g(i) \, I(i = k) \, f^2(j) \, I(j = ip) \, I(j = k) \, g(l) \, I(l = ip) \Big) \right)_{[i,j,k,l,ip]} M^2 \, N^2
                                                           M^2 N^2 - M N^2 - M^2 N + M N
(S(g(i) \ I(i=k) \ f(ip) \ I(ip=jp) \ g(j) \ I(j=k) \ f(l) \ I(l=jp)))_{[i,j,k,l,ip,jp]} \ M^2 \ N^2
                                                           M^2 N^2 - M N^2 - M^2 N + M N
2\left(S(g(i)\ I(i=k)\ f(ip)\ I(ip=jp)\ f(j)\ I(j=k)\ g(l)\ I(l=jp))\right)_{[i,j,k,l,ip,jp]}M^{2}\ N^{2}
2 \left( S \Big( f^2(i) \, I^2(i = k) \, g^2(j) \, I^2(j = k) \Big) \right)_{[i,j,k]}^{N^2 - M} \, {}^{N^2 - M} \, N^2
     Mp M^2 N^2 - Mp M N^2 - Mp M^2 N + Mp M N
      2\left(S\left(f^{2}(i)\,I(i=k)\,I(i=l)\,g^{2}(j)\,I(j=k)\,I(j=l)\right)\right)_{[i,j,k,l]}M^{2}\,N^{2}
       \frac{Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N}{\left(S\left(g^2(i)\ I^2(i=k)\ f^2(j)\ I^2(j=l)\right)\right)_{[i,j,k,l]}M^2\ N^2}
       \frac{1}{Mp \, M^2 \, N^2 - Mp \, M \, N^2 - Mp \, M^2 \, N + Mp \, M \, N}
       2 \left( \hat{S} \Big( g^2(i) \, I^2(i = l) \, f(j) \, I(j = l) \, f(k) \, I(k = l) \Big) \right)_{[i,j,k,l]} M^2 \, N^2
                         Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
      2\left(S\left(f^{2}(i)\,I^{2}(i\!=\!l)\,g(j)\,I(j\!=\!l)\,g(k)\,I(k\!=\!l)\right)\right)_{[i,j,k,l]}M^{2}\,N^{2}
                        Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M\ N^2 + Mp\ M\ N
 \left(S\Big(g(i)\,I(\stackrel{.}{i=l})\,g(j)\,I(\stackrel{.}{j=l})\,f^2(k)\,I^2(\stackrel{.}{k=ip})\Big)\right)_{[i,j,k,l,ip]}M^2\,N^2
                     Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
 \left(S\Big(f(i)\,I(i{=}l)\,f(j)\,I(j{=}l)\,g^2(k)\,I^2(k{=}ip)\Big)\right)_{[i,j,k,l,ip]}M^2\,N^2
                     Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
2 \left( S\! \left( f(i) \stackrel{.}{I}(i\! =\! k) \, g^2(j) \stackrel{.}{I}(j\! =\! ip) \, I(j\! =\! k) \, f(l) \, I(\stackrel{.}{l}\! =\! ip) \right) \right)_{[i,j,k,l,ip]} M^2 \, N^2
                                Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
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 2 \left( S(g(i) \, I(i=ip) \, f(j) \, I(j=ip) \, g(k) \, I(k=ip) \, f(l) \, I(l=ip)) \right)_{[i,j,k,l,ip]} \, M^2 \, N^2 
                         Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
2\left(S\!\left(g(i)\,I(i\!=\!k)\,f^2(j)\,I(j\!=\!ip)\,I(j\!=\!k)\,g(l)\,I(l\!=\!ip)\right)\right)_{[i,j,k,l,ip]}^{F}M^2\,N^2
                     Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
    (S(g(i) \ I(i = k) \ f(ip) \ I(ip = jp) \ g(j) \ I(j = k) \ f(l) \ I(\hat{l} = jp)))_{[i,j,k,l,ip,jp]} \ M^2 \ N^2
                              Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
     2 \left( S(g(i) \, I(i=k) \, \hat{f}(ip) \, I(ip=jp) \, f(j) \, I(j=\hat{k}) \, g(l) \, I(\hat{l}=\hat{jp}) \right) \right)_{[i,j,k,l,ip,jp]} M^2 \, N^2 
                               Mp\ M^2\ N^2 - Mp\ M\ N^2 - Mp\ M^2\ N + Mp\ M\ N
\frac{2\left(S\!\left(f^2(i)\,I^2(i\!=\!k)\,g^2(j)\,I^2(j\!=\!k)\right)\right)_{[i,j,k]}\,M^2\,N^2}{2\left(S\!\left(f^2(i)\,I^2(i\!=\!k)\,g^2(j)\,I^2(j\!=\!k)\right)\right)_{[i,j,k]}\,M^2\,N^2}
    \frac{Np\,M^2\,N^2 - Np\,M\,N^2 - Np\,M^2\,N + Np\,M\,N}{2\left(S\left(f^2(i)\,I(i{=}k)\,I(i{=}l)\,g^2(j)\,I(j{=}k)\,I(j{=}l)\right)\right)_{[i,j,k,l]}\,M^2\,N^2}
    \frac{Np\ M^2\ N^2 - Np\ M\ N^2 - Np\ M^2\ N + Np\ M\ N}{\left(S\left(g^2(i)\ I^2(i=k)\ f^2(j)\ I^2(j=l)\right)\right)_{[i,j,k,l]}M^2\ N^2}
        Np M^2 N^2 - Np M N^2 - Np M^2 N + Np M N
    2\left(\hat{S}\!\left(g^{2}(i)\,I^{2}(i\!=\!\!\hat{l})\,f(j)\,I(j\!=\!\!\hat{l})\,f(k)\,I(k\!=\!\!l)\right)\right)_{[i,j,k,l]}M^{2}\,N^{2}
                  Np\ M^2\ N^2 - Np\ M\ N^2 - Np\ M^2\ N + Np\ M\ N
    2 \left( S \Big( f^2(\hat{i}) \, I^2(i \! = \! l) \, g(\hat{j}) \, I(j \! = \! l) \, g(\hat{k}) \, I(k \! = \! l) \Big) \right)_{[i,j,k,l]} M^2 \, N^2
                 Np M^2 N^2 - Np M N^2 - Np M^2 N + Np M N
\frac{\left(S\left(g(i)\,I(i=l)\,g(j)\,I(j=l)\,f^{2}(k)\,I^{2}(k=ip)\right)\right)_{[i,j,k,l,ip]}M^{2}\,N^{2}}{Np\,M^{2}\,N^{2}-Np\,M\,N^{2}-Np\,M^{2}\,N+Np\,M\,N}
 (S(f(i) I(i=l) f(j) I(j=l) g^{2}(k) I^{2}(k=ip)))_{[i,j,k,l,ip]}^{I} M^{2} N^{2} 
               Np \ M^2 \ N^2 - Np \ M \ N^2 - Np \ M^2 \ N + Np \ M \ N
2\left(S\!\left(f(i)\,\dot{I}(i\!=\!k)\,g^2(j)\,\dot{I}(j\!=\!ip)\,I(j\!=\!k)\,f(l)\,I(\dot{l}\!=\!ip)\right)\right)_{[i,j,k,l,ip]}M^2\,N^2
                      Np \ M^2 \ N^2 - Np \ M \ N^2 - Np \ M^2 \ N + Np \ M \ N
\frac{2\left(S(g(i)\,I(i=ip)\,f(j)\,I(j=ip)\,g(k)\,I(k=ip)\,f(l)\,I(l=ip))\right)_{[i,j,k,l,ip]}\,M^2\,N^2}{(2(i-ip)\,I(i=ip)\,I(j=ip)\,g(k)\,I(k=ip)\,f(l)\,I(l=ip))}
                          Np \ M^2 \ N^2 - Np \ M \ N^2 - Np \ M^2 \ N + Np \ M \ N
2\left(S\!\left(g(i)\,I(i\!=\!k)\,f^2(j)\,I(j\!=\!ip)\,I(j\!=\!k)\,g(l)\,I(l\!=\!ip)\right)\right)_{[i,j,k,l,ip]}M^2\,N^2
                      Np M^2 N^2 - Np M N^2 - Np M^2 N + Np M N
    \frac{(S(g(i)\,I(i\!=\!k)\,f(i\!p)\,I(i\!p\!=\!j\!p)\,g(j)\,I(j\!=\!k)\,f(l)\,I(l\!=\!j\!p)))_{[i,j,k,l,i\!p,j\!p]}\,M^2\,N^2}{Np\,M^2\,N^2\!-\!Np\,M\,N^2\!-\!Np\,M\,N\,N+Np\,M\,N}
    \frac{2\left(S(g(i)\,I(i=\!k)\,f(ip)\,I(ip=\!jp)\,f(j)\,I(j=\!k)\,g(l)\,I(l=\!jp))\right)_{[i,j,k,l,ip,jp]}\,M^2\,N^2}{(2i)^2}
                                Np \ M^2 \ N^2 - Np \ M \ N^2 - Np \ M^2 \ N + Np \ M \ N
    \frac{2\left(S\left(f^{2}(i)\,I^{2}(i\!=\!k)\,g^{2}(j)\,I^{2}(j\!=\!k)\right)\right)_{[i,j,k]}^{2}\,M^{2}\,N^{2}}{M_{P}\,N_{P}\,M^{2}\,N^{2}\!-\!M_{P}\,N_{P}\,M\,N^{2}\!-\!M_{P}\,N_{P}\,M^{2}\,N\!+\!M_{P}\,N_{P}\,M\,N^{2}}
2\left(S(f^{2}(i) I(i=k) I(i=l) g^{2}(j) I(j=k) I(j=l)\right)_{[i,j,k,l]} M^{2} N^{2}
  Mp \ Np \ M^2 \ N^2 - Mp \ Np \ M \ N^2 - Mp \ Np \ M^2 \ N + Mp \ Np \ M \ N
          \left(S(g^2(i) I^2(i=k) f^2(j) I^2(j=l))\right)_{[i,j,k,l]} M^2 N^2
Mp \ Np \ M^2 \ N^2 - Mp \ Np \ M \ N^2 - Mp \ Np \ M^2 \ N + Mp \ Np \ M \ N
2\left(S\left(g^{2}(i)\,I^{2}(i=l)\,f(j)\,I(j=l)\,f(k)\,I(k=l)\right)\right)_{[i,j,k,l]}M^{2}\,N^{2}
 Mp \ Np \ M^2 \ N^2 - Mp \ Np \ M \ N^2 - Mp \ Np \ M^2 \ N + Mp \ Np \ M \ N
2 \left( S \Big( f^2(i) \, I^2(i = l) \, g(j) \, I(j = l) \, g(k) \, I(k = l) \Big) \right)_{[i,j,k,l]} M^2 \, N^2
Mp \ Np \ M^2 \ N^2 - Mp \ Np \ M \ N^2 - Mp \ Np \ M^2 \ N + Mp \ Np \ M \ N
     \left( S\left( g(i) \ I(i=l) \ g(j) \ I(j=l) \ f^2(k) \ I^2(k=ip) \right) \right)_{[i,j,k,l,ip]} M^2 \ N^2 
      Mp\ Np\ M^2\ N^2 - Mp\ Np\ M\ N^2 - Mp\ Np\ M^2\ N + Mp\ Np\ M\ N
     \left(S(f(i) I(i=l) f(j) I(j=l) g^2(k) I^2(k=ip))\right)_{[i,j,k,l,ip]} M^2 N^2
     Mp \ Np \ M^2 \ N^2 - Mp \ Np \ M \ N^2 - Mp \ Np \ M^2 \ N + Mp \ Np \ M \ N
    2\left(S(f(i)\,I(i=k)\,g^2(j)\,I(j=ip)\,I(j=k)\,f(l)\,I(l=ip)\right)\right)_{[i,j,k,l,ip]}M^2\,N^2
              Mp \ Np \ M^2 \ N^2 - Mp \ Np \ M \ N^2 - Mp \ Np \ M^2 \ N + Mp \ Np \ M \ N
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 $-\frac{2\left(S(g(i)\,I(i\!=\!i\!p)\,f(j)\,I(j\!=\!i\!p)\,g(k)\,I(k\!=\!i\!p)\,f(l)\,I(l\!=\!i\!p))\right)_{[i,j,k,l,i\!p]}\,M^2\,N^2}{Mp\,\,Np\,\,M^2\,N^2\!-\!Mp\,\,Np\,\,M\,\,N^2\!-\!Mp\,\,Np\,\,M^2\,\,N\!+\!Mp\,\,Np\,\,M\,\,N}\\ -\frac{2\left(S\left(g(i)\,I(i\!=\!k)\,f^2(j)\,I(j\!=\!i\!p)\,I(j\!=\!k)\,g(l)\,I(l\!=\!i\!p)\right)\right)_{[i,j,k,l,i\!p]}\,M^2\,N^2}{Mp\,\,Np\,\,M^2\,N^2\!-\!Mp\,\,Np\,\,M\,\,N^2\!-\!Mp\,\,Np\,\,M^2\,N\!+\!Mp\,\,Np\,\,M\,\,N}\\ \frac{Mp\,\,Np\,\,M^2\,N^2\!-\!Mp\,\,Np\,\,M\,\,N^2\!-\!Mp\,\,Np\,\,M^2\,N\!+\!Mp\,\,Np\,\,M\,\,N}{Mp\,\,Np\,\,M^2\,N^2\!-\!Mp\,\,Np\,\,M\,\,N^2\!-\!Mp\,\,Np\,\,M^2\,N\!+\!Mp\,\,Np\,\,M\,\,N}\\ \frac{Mp\,\,Np\,\,M^2\,N^2\!-\!Mp\,\,Np\,\,M\,\,N^2\!-\!Mp\,\,Np\,\,M^2\,N\!+\!Mp\,\,Np\,\,M\,\,N}{Mp\,\,Np\,\,M^2\,\,N^2\!-\!Mp\,\,Np\,\,M\,\,N^2\!-\!Mp\,\,Np\,\,M^2\,\,N\!+\!Mp\,\,Np\,\,M\,\,N}\\ \frac{2\left(S(g(i)\,\,I(i\!=\!k)\,\,f(i\!p)\,\,I(i\!p\!=\!j\!p)\,\,f(j)\,\,I(j\!=\!k)\,\,g(l)\,\,I(l\!=\!j\!p)\right)\right)_{[i,j,k,l,i\!p,j\!p]}\,M^2\,\,N^2}{Mp\,\,Np\,\,M^2\,N^2\!-\!Mp\,\,Np\,\,M\,\,N^2\!-\!Mp\,\,Np\,\,M^2\,\,N\!+\!Mp\,\,Np\,\,M\,\,N}$